

Claim Amendments

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1. (currently amended) An apparatus, comprising:

a light source;

a long period Bragg grating that is optically coupled with the light source via a first optical splice; and

an amplification fiber that is optically coupled with the long period Bragg grating via a second optical splice;

wherein the light source and the amplification fiber are arranged in a forward pumped broadband fiber source configuration without ~~a wavelength division~~ an optical multiplexer between the light source and the amplification fiber;

wherein the light source sends one or more pump optical signals to the long period Bragg grating;

wherein the long period Bragg grating transmits the one or more pump optical signals to the amplification fiber;

wherein the amplification fiber absorbs a subset of the one or more pump optical signals and emits one or more output signals toward the light source;

wherein the long period Bragg grating attenuates the one or more output signals.

2. (previously presented) The apparatus of claim 1, wherein the one or more pump optical signals comprise a substantially same first wavelength, wherein the one or more output signals comprise a substantially same second wavelength, wherein the first wavelength and the second wavelength comprise different wavelengths;

wherein the long period Bragg grating comprises a wavelength attenuation range that omits the substantially same first wavelength and comprises the substantially same second wavelength;

wherein the long period Bragg grating transmits the one or more pump optical signal to the amplification fiber;

wherein the long period Bragg grating attenuates the one or more output signals.

3. (previously presented) The apparatus of claim 2, wherein the wavelength attenuation range comprises a plurality of wavelength attenuation sub-ranges, wherein the plurality of wavelength attenuation sub-ranges comprise zero or more wavelength attenuation sub-ranges that overlap.

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4

NGC-153 / 000060-199

4. (previously presented) The apparatus of claim 1, wherein the long period Bragg grating comprises a first long period Bragg grating, the apparatus further comprising a second long period Bragg grating;

wherein the first long period Bragg grating is optically coupled with a first side of the amplification fiber via the second optical splice, wherein the second long period Bragg grating is optically coupled with a second side of the amplification fiber via a third optical splice;

wherein the first long period Bragg grating attenuates the one or more output signals;

wherein the amplification fiber receives the one or more pump optical signals and transmits one or more residual signals of the one or more pump optical signals to the second long period Bragg grating;

wherein the second long period Bragg grating attenuates the one or more residual signals.

5. (currently amended) The apparatus of claim 4, wherein the one or more output signals comprise one or more first output signals;

wherein the amplification fiber absorbs a subset of the one or more pump optical signals and emits the one or more first output signals toward the first long period Bragg grating and emits one or more second output signals toward the second long period Bragg grating;

wherein the first long period Bragg grating attenuates the one or more first output signals;

wherein the second long period Bragg grating transmits the one or more second output signals to an first optical component.

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5

NGC-153 / 000060-199

6. (previously presented) The apparatus of claim 5, wherein the one or more first output signals and one or more second output signals comprise a substantially same first wavelength, wherein the one or more pump optical signals and the one or more residual signals comprise a substantially same second wavelength;

wherein the first long period Bragg grating comprises:

a first cladding;

a first core surrounded by the first cladding, wherein the first core couples a subset of the one or more first output signals to the first cladding to attenuate the one or more first output signals; and

a first wavelength attenuation range that comprises the substantially same first wavelength and omits the substantially same second wavelength;

wherein the second long period Bragg grating comprises:

a second cladding;

a second core surrounded by the second cladding, wherein the second core couples a subset of the one or more residual signals to the second cladding to attenuate the one or more residual signals; and

a second wavelength attenuation range that omits the substantially same first wavelength and comprises the substantially same second wavelength.

7. (previously presented) The apparatus of claim 6, wherein the first long period Bragg grating attenuates the one or more first output signals to promote a reduction of backreflection of the one or more first output signals.

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6

NGC-153 / 000060-199

8. (currently amended) The apparatus of claim 7 in combination with the first optical component, wherein the first optical component receives the one or more second output signals from the second long period Bragg grating and returns a subset of the one or more second output signals to the second long period Bragg grating;

wherein the second long period Bragg grating transmits the subset of the one or more second output signals through the amplification fiber to the first long period Bragg grating;

wherein the first long period Bragg grating attenuates the subset of the one or more second output signals to promote a reduction of backreflection of the one or more second output signal.

9. (currently amended) The apparatus of claim 5 in combination with the first optical component, wherein the first optical component comprises a fiber optic gyroscope.

10. (original) The apparatus of claim 9, wherein the fiber optic gyroscope comprises a scale factor linearity error;

wherein the second long period Bragg grating attenuates the one or more residual signals to promote a reduction of the scale factor linearity error of the fiber optic gyroscope.

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11. (currently amended) The apparatus of claim 5, ~~wherein the optical component comprises a first optical component, wherein the one or more residual signals comprise one or more first residual signals, wherein the first optical component redirects the one or more second residual signals and the one or more second output signals back through the second long period Bragg grating, the apparatus further comprising:~~

a second optical component optically coupled with the second long period Bragg grating;

wherein the second long period Bragg grating receives the one or more first residual signals and the second output signal from the first optical component, wherein the second long period Bragg grating attenuates the one or more first residual signals to create one or more second residual signals;

wherein the second long period Bragg grating attenuates the one or more second residual signals and transmits the one or more second output signals towards the second optical component.

12. (previously presented) The apparatus of claim 11, further comprising:

an optical coupler that is coupled with the second long period Bragg grating; wherein the optical coupler directs the one or more second output signals to the second optical component.

13. (previously presented) The apparatus of claim 12, wherein the first optical component comprises a multi-function integrated optic chip.

14. (previously presented) The apparatus of claim 1, wherein the amplification fiber comprises an erbium-doped fiber.

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15. (previously presented) The apparatus of claim 1, wherein the light source comprises a pump diode laser.

16. (previously presented) The apparatus of claim 1, wherein the first and second optical splices comprise first and second fusion splices.

17. (previously presented) The apparatus of claim 1, wherein the long period Bragg grating comprises a cladding and an optical core surrounded by the cladding;

wherein the optical core couples a subset of the one or more output signals to the cladding to attenuate the one or more output signals.

18. (currently amended) The apparatus of claim 1, wherein the long period Bragg grating promotes a reduction of backreflection of the one or more output signals through attenuation of the one or more output signals;

wherein the light source causes the backreflection of a subset of the one or more output signals and creates one or more backreflected signals, wherein the light source directs the one or more backreflected signals toward the long period Bragg grating;

wherein the long period Bragg grating attenuates the one or more backreflected signals to promote a reduction of oscillation of the one or more output signals.

19. (canceled)

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20. (currently amended) A method, comprising the step of:

promoting a reduction of backreflection of an output signal from an amplification fiber of a forward pumped broadband fiber source through employment of a long period Bragg grating that is optically spliced directly between the amplification fiber and a light source without an optical multiplexer between the light source and the amplification fiber.

21. (previously presented) The method of claim 20, wherein the step of promoting comprises the step of:

attenuating the output signal through employment of the long period Bragg grating.

22. (previously presented) The method of claim 21, wherein the long period Bragg grating comprises a first long period Bragg grating, the method further comprising the step of:

promoting a reduction of scale factor linearity error for a fiber optic gyroscope through employment of a second long period Bragg grating that is optically spliced to the amplification fiber and the fiber optic gyroscope, wherein the fiber optic gyroscope employs one or more of the one or more output signals.

23. (previously presented) The method of claim 22, wherein the step of promoting the reduction of scale factor linearity error for the fiber optic gyroscope comprises the step of:

attenuating a residual signal from the light source before the residual signal reaches the fiber optic gyroscope.

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10

NGC-153 / 000060-199

24. (currently amended) The apparatus of claim ~~16~~ 1, wherein the light source is optically coupled directly to the long period Bragg grating via the first ~~fusion-optical~~ splice;

wherein the long period Bragg grating is optically coupled directly to the amplification fiber via the second ~~fusion-optical~~ splice;

wherein the forward pumped broadband fiber source configuration comprises only the light source, the long period Bragg grating, and the amplification fiber.

25. (currently amended) The apparatus of claim 4, wherein the first, second, and third optical splices comprise first, second, and third fusion splices;

wherein the light source is optically coupled directly to the first long period Bragg grating via the first fusion splice;

wherein the first long period Bragg grating is optically coupled directly to the amplification fiber via the second fusion splice;

wherein the amplification fiber is optically coupled directly to the second long period Bragg grating via the third fusion splice;

wherein the forward pumped broadband fiber source configuration comprises only the light source, the first long period Bragg grating, the amplification fiber, and the second long period Bragg grating.

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26 (new). An apparatus, comprising:

a long period Bragg grating that comprises a wavelength attenuation range;

a pump diode laser optically coupled directly to a first side of a long period Bragg grating via a first optical splice;

an amplification fiber that is optically coupled directly to a second side of the long period Bragg grating via a second optical splice;

wherein the pump diode laser and the amplification fiber are arranged in a forward pumped broadband fiber source configuration;

wherein the amplification fiber is configured to absorb a pump optical signal from the pump laser diode and emit an output signal;

wherein a wavelength of the pump optical signal is outside of the wavelength attenuation range of the long period Bragg grating;

wherein a wavelength of the output signal is within the wavelength attenuation range of the long period Bragg grating;

wherein the long period Bragg grating is configured to transmit the pump optical signal from the pump diode laser to the amplification fiber and attenuate the output signal from the amplification fiber to the pump diode laser.

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